UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 25, 1982

SUBJECT: Groundwater Sampling
Vicinity of Carroll Products and United Nuclear
Wood River Junction, Rhode Island

FROM: Charles Porfert CP
ESD - Water Section

TO: Eliott Thomas
Waste Management

On July 28, 1982, Eliott Thomas, Steven Serian, Barbara Ryan (U.S.G.S.) and I conducted a groundwater sampling survey in the vicinity of Carroll Products and United Nuclear.

Groundwater samples were collected for volatile organics using a copper bailer. The bailer was rinsed three times with distilled water and three times with well water (from the well being sampled) between sampling sites.

Each well was pumped approximately ten minutes or until the groundwater's conductivity stabilized. The well was then allowed to recharge before it was sampled. The only exception to this procedure was well #CHW440, the well was to deep to pump.

EPA regional chain-of-custody procedures were followed for the collection and storage of the samples. The samples were brought to the EPA Regional Laboratory, Lexington, Massachusetts.

RESULTS

- Table one lists the volatile organics that were detected in the groundwater samples. The table shows that the concentration of the volatile organics is in the low parts per billion range.

- Weather condition during sampling was rainy.

VOLATILE ORGANICS DATA
July 28, 1982
TABLE ONE

Sample Number	70694	70695	70796	70797	70798	70799	74070
Station Number (well)	TRIP01	CHW440	VOID	CHW443	CHW429	CHW449	CHW567
Time (hours)		1210		1245	1320	1351	1416
Parameter (ug/l)							
1,1,1-Trichloroethane	ND	3.3		T	ND	ND	ND
Trichloroethylene	ND	T		ND	ND	T	ND
Tetrachloroethene	ND	16		2.8	T	16	T
Toluene	ND	ND		ND	T	T	T
Benzene	ND	ND		ND	ND	ND	T

Note

ug/l - ppb
ND - not detected, < 0.5 ug/l
T - trace, < 2 ug/l

Raw Data

Project 3-701-012

GCA Control No. 23380

DATA REPORT SHEET

Purgeables

Sample I.D. 70694 Analysis Date 8/5/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND*	
acrylonitrile		ND*	
trichlorofluoromethane		ND	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane		ND	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene		ND	
dibromochloromethane		ND	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether		ND	
bromoform		ND	
tetrachloroethene		ND	
1,1,2,2-tetrachloroethane		ND	
toluene		ND	
chlorobenzene		ND	
ethylbenzene		ND	

ND = < 0.5 µg/l
ND* = < 20 µg/l

Project 3-701-012 GCA Control No. 23381

DATA REPORT SHEET

Purgeables

Sample I.D. 70695 Analysis Date 8/5/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND*	
acrylonitrile		ND*	
trichlorofluoromethane		ND	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane	97	3.3	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene	130	Trace	
dibromochloromethane		ND	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether		ND	
bromoform		ND	
tetrachloroethene	166	16	
1,1,2,2-tetrachloroethane		ND	
toluene		ND	
chlorobenzene		ND	
ethylbenzene		ND	

ND = < 0.5 µg/1
Trace = < 2 µg/1
ND* = < 20 µg/1

Project 3-701-012 GCA Control No. 23383

DATA REPORT SHEET

Purgeables

Sample I.D. 70797 Analysis Date 8/5/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/1)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND*	
acrylonitrile		ND*	
trichlorofluoromethane		ND	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane	97	Trace	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene		ND	
dibromochloromethane		ND	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether		ND	
bromoform		ND	
tetrachloroethene	166	2.8	
1,1,2,2-tetrachloroethane		ND	
toluene		ND	
chlorobenzene		ND	
ethylbenzene		ND	

ND = < 0.5 µg/1
Trace = < 2 µg/1
ND* = < 20 µg/1

Project 3-701-012

GCA Control No. 23384

DATA REPORT SHEET

Purgeables

Sample I.D. 70798

Sample Matrix Water

Analysis Date 8/5/82

Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND	
acrylonitrile		ND*	
trichlorofluoromethane		ND*	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane		ND	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene		ND	
dibromochloromethane		ND	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether		ND	
bromoform		ND	
tetrachloroethene		ND	
1,1,2,2-tetrachloroethane	166	Trace	
toluene		ND	
chlorobenzene	91	Trace	
ethylbenzene		ND	

ND = < 0.5 µg/l
Trace = < 2 µg/l
ND* = < 20 µg/l

Project 3-701-012

GCA Control No. 23385

DATA REPORT SHEET

Purgeables

Sample I.D. 70799

Analysis Date 8/5/82

Sample Matrix Water

Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND	
acrylonitrile		ND*	
trichlorofluoromethane		ND*	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane		ND	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene		ND	
dibromochloromethane	130	Trace	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether		ND	
bromoform		ND	
tetrachloroethene		ND	
1,1,2,2-tetrachloroethane	166	16	
toluene		ND	
chlorobenzene	91	Trace	
ethylbenzene		ND	

ND = < 0.5 µg/l
Trace = < 2 µg/l
ND* = < 20 µg/l

Project 3-701-012

GCA Control No. 23386

DATA REPORT SHEET

Purgeables

Sample I.D. 74070

Analysis Date 8/5/82

Sample Matrix Water

Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
chloromethane		ND	
dichlorodifluoromethane		ND	
bromomethane		ND	
vinyl chloride		ND	
chloroethane		ND	
methylene chloride		ND	
acrolein		ND	
acrylonitrile		ND*	
trichlorofluoromethane		ND*	
1,1-dichloroethylene		ND	
1,1-dichloroethane		ND	
trans-1,2-dichloroethylene		ND	
chloroform		ND	
1,2-dichloroethane		ND	
1,1,1-trichloroethane		ND	
carbon tetrachloride		ND	
bromodichloromethane		ND	
bis-chloromethyl ether		ND	
1,2-dichloropropane		ND	
trans-1,3-dichloropropene		ND	
trichloroethylene		ND	
dibromochloromethane		ND	
cis-1,3-dichloropropene		ND	
1,1,2-trichloroethane		ND	
benzene		ND	
2-chloroethylvinyl ether	78	Trace	
bromoform		ND	
tetrachloroethene		ND	
1,1,2,2-tetrachloroethane	166	Trace	
toluene		ND	
chlorobenzene	91	Trace	
ethylbenzene		ND	

ND = < 0.5 µg/l
Trace = < 2 µg/l
ND* = < 20 µg/l

Ed Taylor

October 5, 1982

Ms. Barbara J. Ryan, Hydrologist
Water Resources Division
Geological Survey
U.S. Department of the Interior
John O'Pastore Federal Building
and U.S. Post Office, Room 224
Providence, RI 02903

Dear Ms. Ryan:

The two four liter water samples received by the Center as per your memorandum of August 23, 1982 had been received. One sample had been filtered and the other was unfiltered. Both had been acidified as per your memo. Only the unfiltered water was analyzed. Attached are the results of the analysis of this sample.

The gross beta exceeded the 50 pCi/l content and therefore a strontium-90 content and gamma scan were performed. The strontium-90 content exceeded the EPA Interium Primary Drinking Water Standards. This standard is 8 pCi/l based on a consumption of 2 liters/day/year. The Gamma Scan (using a Ge(li) detector system) showed the presence of radon-222 (daughter of radium-226) only. No other gamma emitters were detected.

The gross alpha content exceeded the 5 pCi/l limit and was then analyzed for total radium. The total radium content did not exceed 3 pCi/l, therefore a radium-226 analysis was not performed. Based on the data obtained this well, if used for drinking water, would exceed the EPA Primary Drinking Water Standards for strontium-90 content. It would also have to be monitored more closely for radium-226 and radium-228 content.

Should you have any further questions, please let us know.

Sincerely yours,

/s/

Edmond J. Baratta

attachment

cc: E. Taylor, EPA, Region I ✓
W. Stroube, PhD, BF
Laboratory Branch, FSD, EDRO
Director, WEAC, HFR-1300

WEAC:FJR:mm:10/5/82

ATTACHMENT

Analysis	Activity
Gross Alpha	14.5 ± 3.0 pCi/l
Gross Beta	393 ± 28 pCi/l
Total Strontium	57 ± 2 pCi/l
Strontium-90	60 ± 2 pCi/l
Tritium	1.9 ± 0.1 mCi/l
Total Radium	2.6 ± 0.4 pCi/l
Radium-228	3.5 ± 1.2 pCi/l
Gross Gamma	Presence of Radon-222 detected.

CALLED Ed Bartha 4/24/84 THIS IS M Ci = 10^{-9} NOT MM Ci 10^{-3} HSR